作成承認印	配布許可印
ニコン映像カンパニー CS推進部 GM	

AF-S Nikkor 300mm f/2.8D Ⅱ

JAA33551 (BLACK)

JAA33501 (LIGHT GRAY)

REPAIR MANUAL

Nikon | NIKON CORPORATION
Tokyo, Japan

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〔1〕 Specifications

Main specifications

Focal length	:	300mm
Maximum aperture	:	1: 2.8
Lens construction	:	11 elements in 8 groups (One protective glass is built in.)
Picture angle	:	With 135 system camera 8° 10'
		With IX240 system camera 6° 40'
		With Nikon Digital Camera D1 5° 20'
Distance scale	:	∞ ～ 2.2m
Focusing	:	(IF) G7～G9 Moving type
Aperture blades	:	9 pieces, Round shaped aperture
Diaphragm	:	Fully automatic (Minimum aperture lock is possible.)
Mount	:	Nikon F mount
Filters	:	Rear setting type 52m (P=0.75mm)
Tripod socket	:	360° rotary type
Dimension	:	φ124mm(dia.), 268.5mm(Length), 277mm(Maximum length)
Weight	:	Approx. 2560g (Including the tripod socket)
Motor for AF driving	:	Silent Wave Motor
Encoder		
For AF driving	:	MR method
For detecting the MF		
ring rotation	:	By the conductor pattern of PCB and the sliding brush
For absolute distance	:	By the conductor pattern of PCB and the sliding brush

〔2〕 DISASSEMBLING

Notes: The structure except MR encoder is the same as AF-S300/2.8D(JAA33351) and that of MR encoder is the same as AF-S80-200/2.8D(JAA76551).
Therefore, only the different items to disassemble, assemble and adjustment from the above lens are in this Repair Manual.
For the other part, as the items and name of lens of Repair Manual is mentioned, please refer to those.

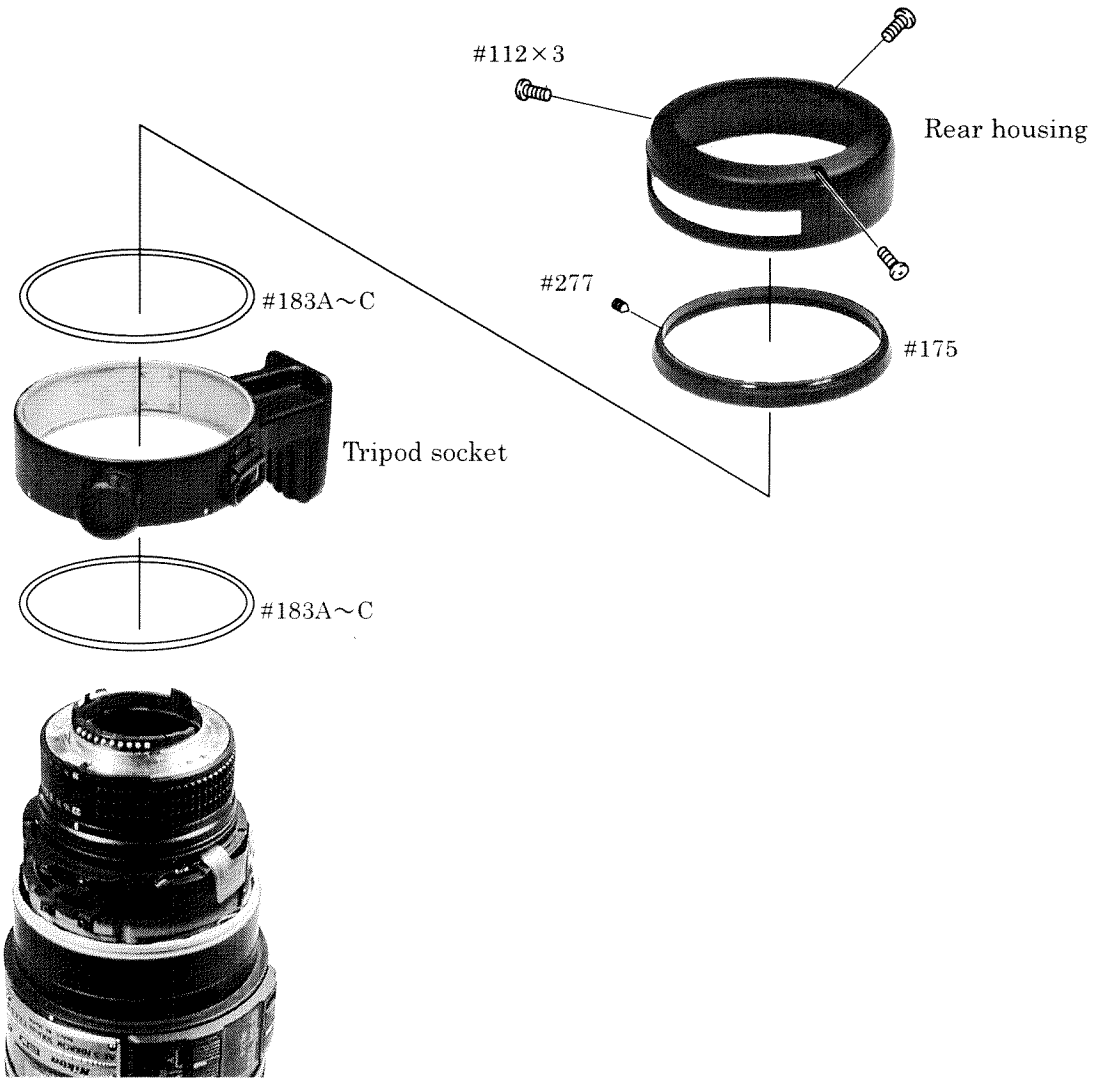
1. APPEARANCE

CAUTION : The AF-S300/2.8D II (JAA33551) does not have a lens design frequency and so each lens group can be replaced.

RUBBER RING, 1st LENS GROUP, 2nd LENS GROUP

Use the new tool; 2nd lens group wrench J11288 and refer to AF-S300/2.8D(JAA33351).

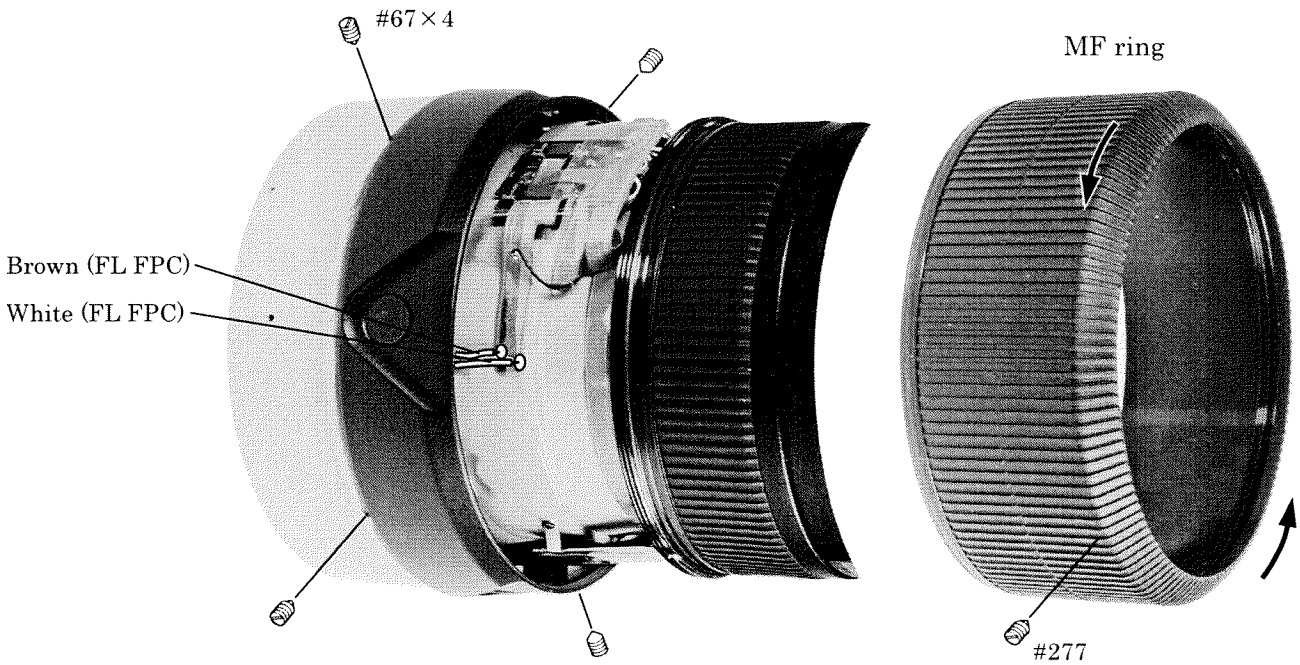
TRIPOD SOCKET, REAR HOUSING

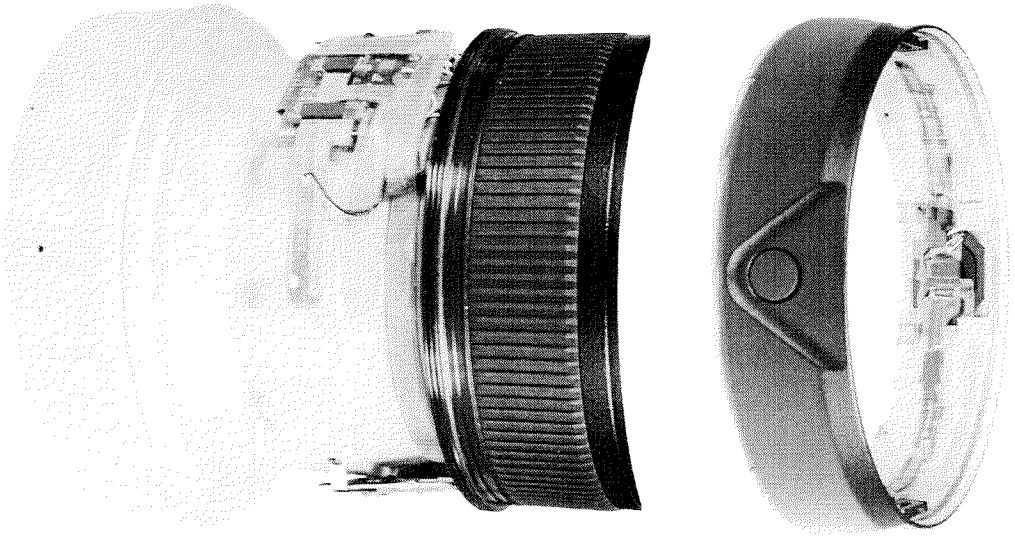


CHANGE-OVER SWITCH UNIT

Refer to AF-S300/2.8D(JAA33351).

AF LOCK RING, MF RING

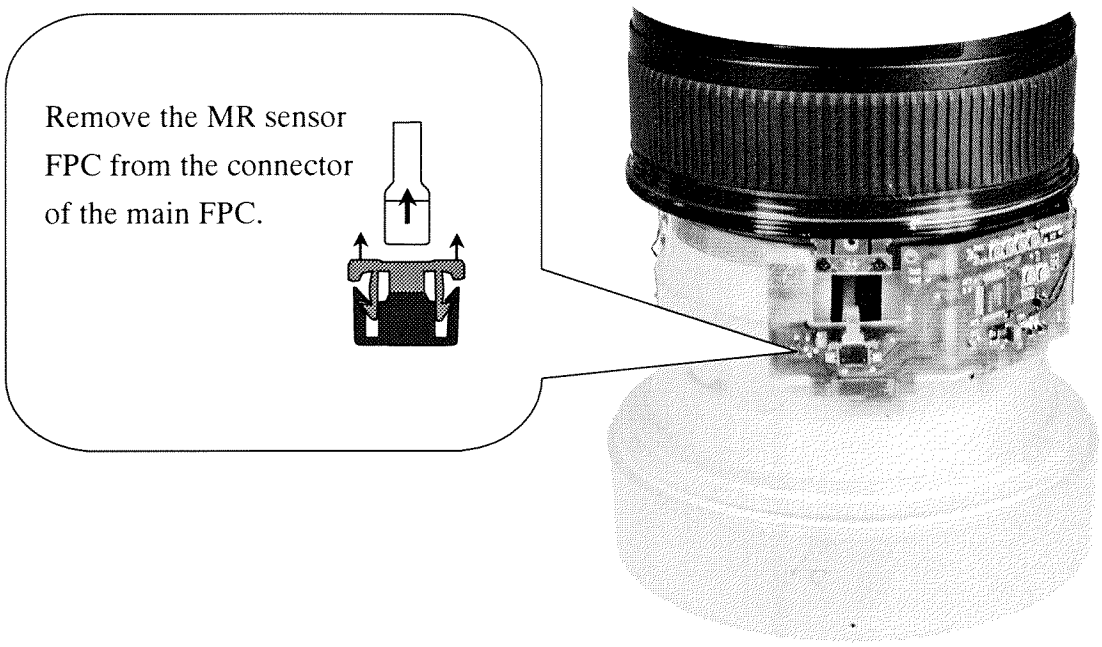


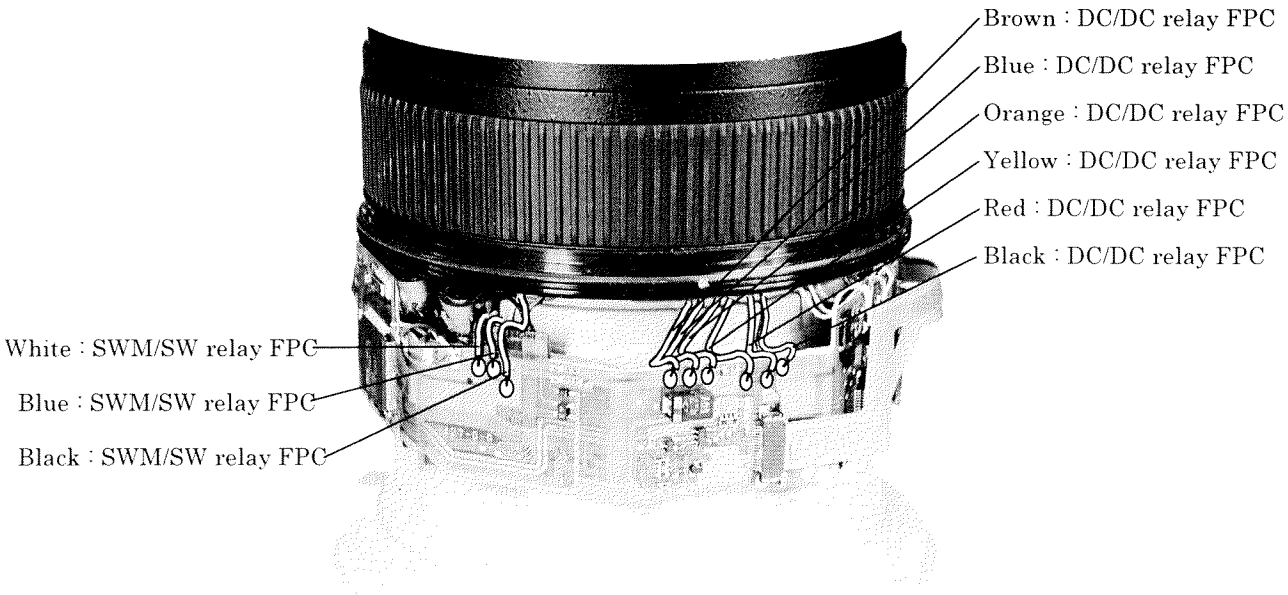


AF lock ring

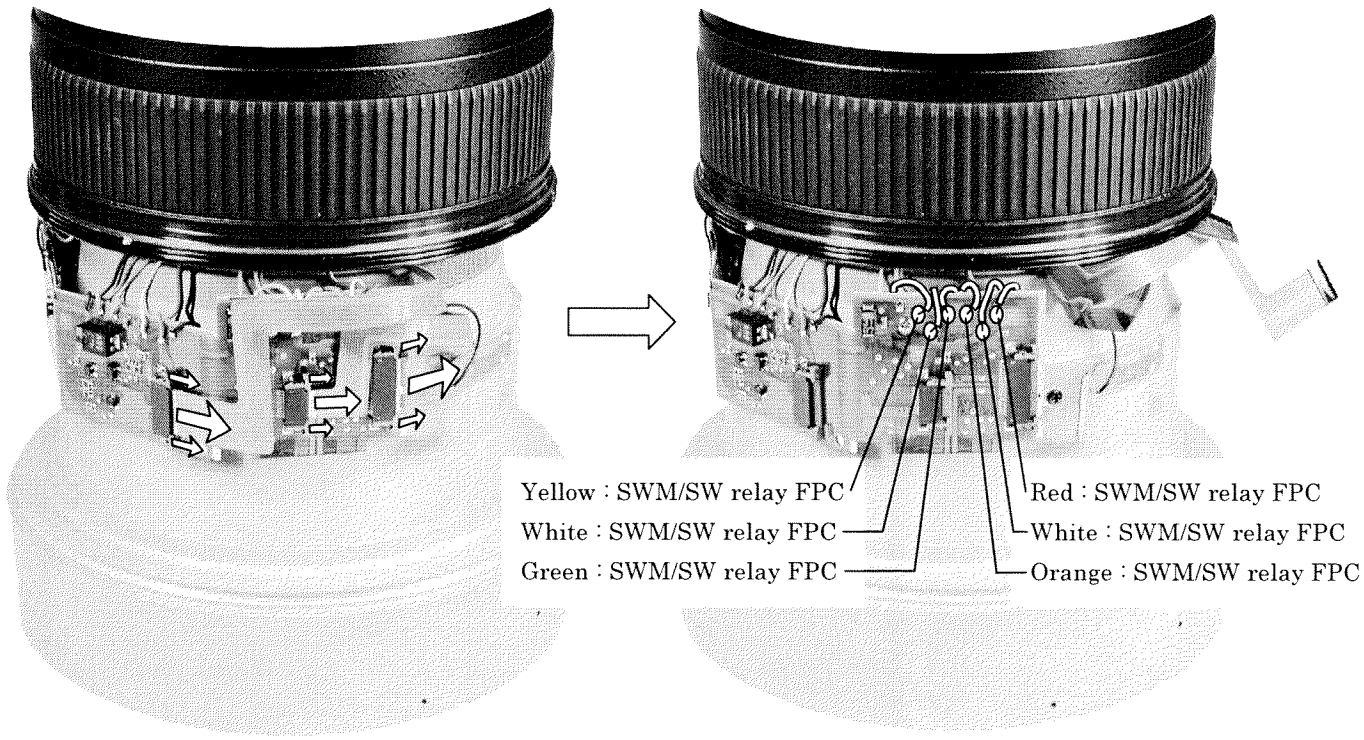
- It is not necessary to remove the FL FPC from the inside of the AF lock ring except when replacing it.

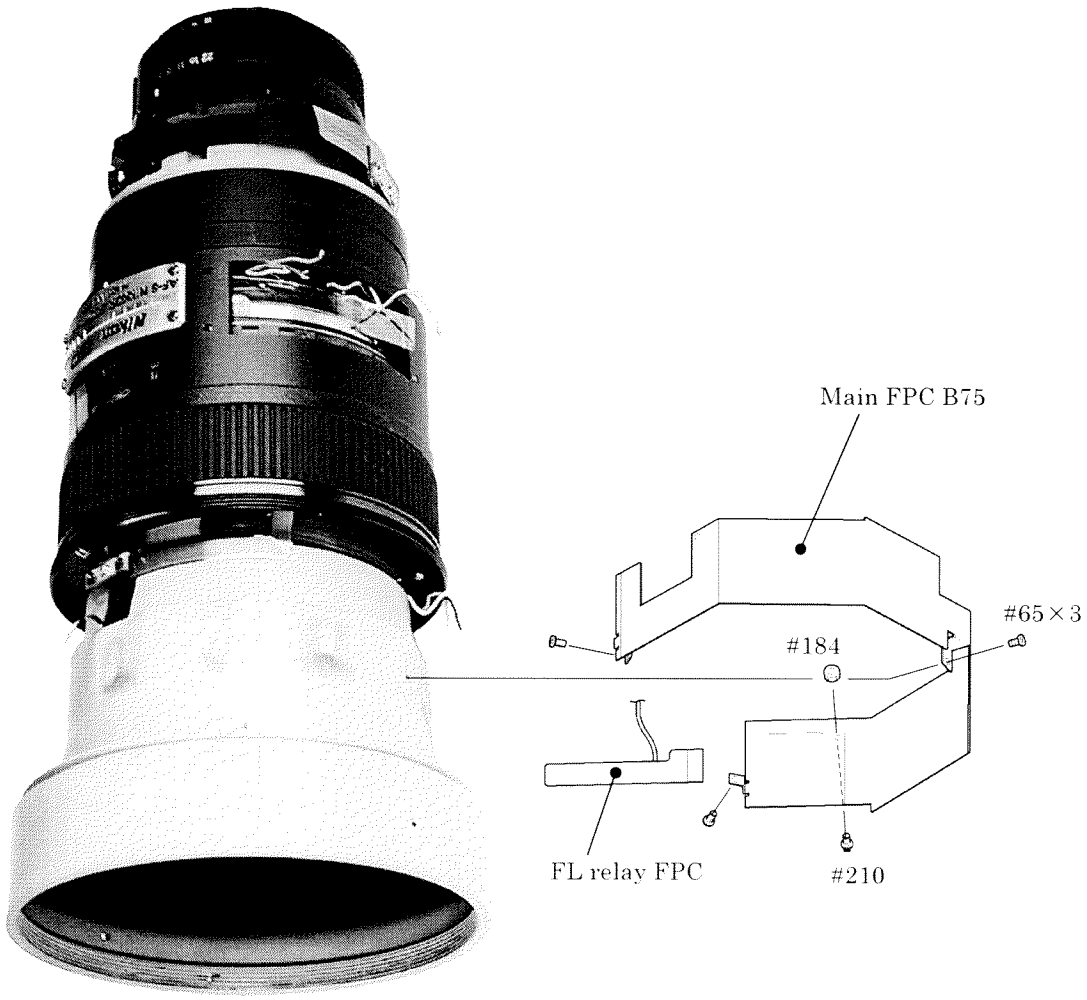
MAIN FPC


Remove the MR sensor
FPC from the connector
of the main FPC.

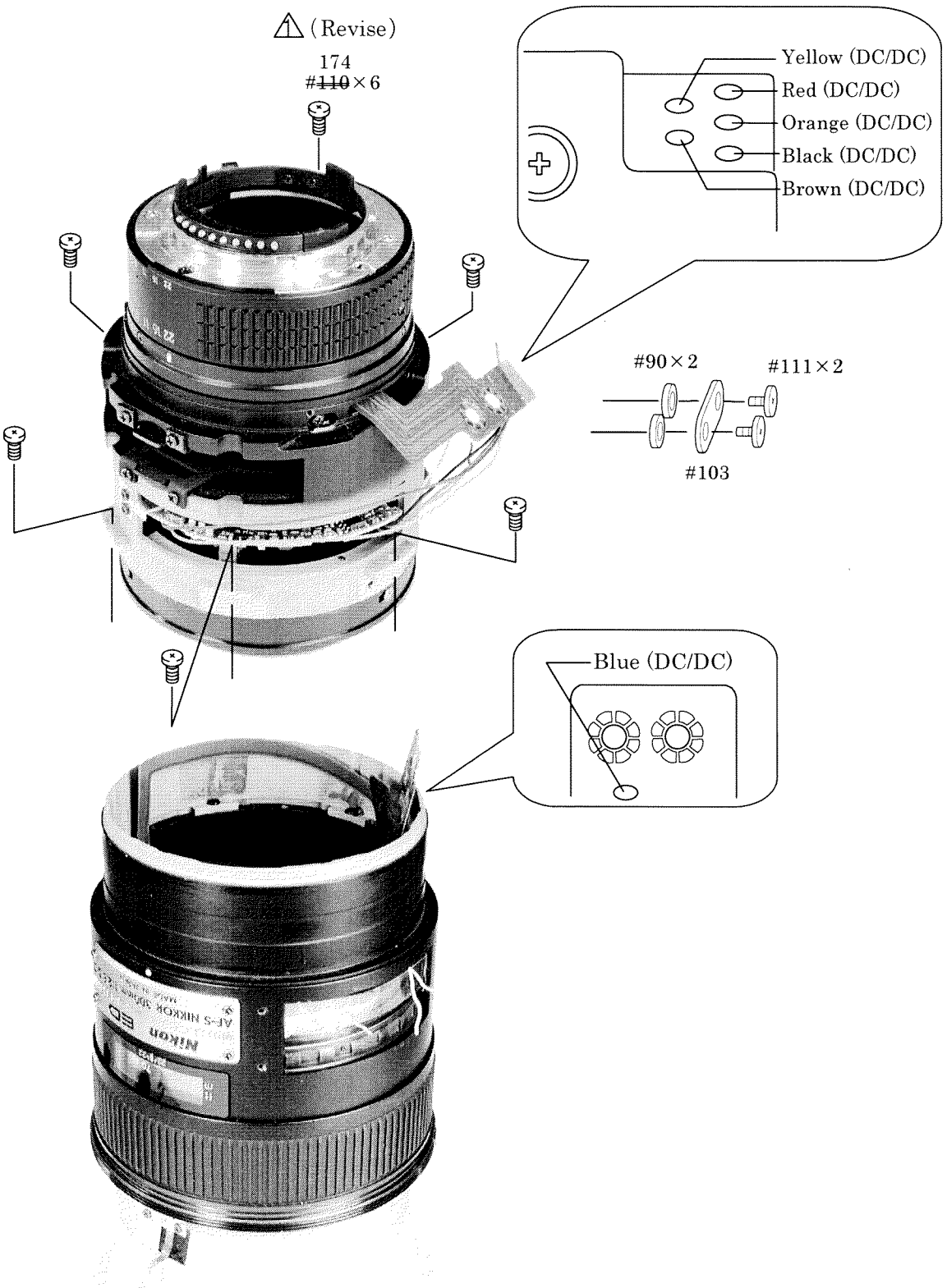

Brown : DC/DC relay FPC
Blue : DC/DC relay FPC
Orange : DC/DC relay FPC
Yellow : DC/DC relay FPC
Red : DC/DC relay FPC
Black : DC/DC relay FPC
White : SWM/SW relay FPC
Blue : SWM/SW relay FPC
Black : SWM/SW relay FPC

• Remove the 3 pieces of the relay FPC from the connector.


Yellow : SWM/SW relay FPC
White : SWM/SW relay FPC
Green : SWM/SW relay FPC
Red : SWM/SW relay FPC
White : SWM/SW relay FPC
Orange : SWM/SW relay FPC



SEPARATION OF THE REAR GROUP



2. REAR GROUP

APERTURE BLADE UNIT, FILTER RETAINER, DC-DC CONVERTER, 4th LENS GROUP

Refer to AF-S300/2.8D(JAA33351).

FIXED APERTURE UNIT, COUPLING KEY

Refer to AF-S300/2.8D(JAA33351).

EE LOCK RING, APERTUER RING, BAYONET MOUNT, AF CONTACT FPC

Refer to AF-S300/2.8D(JAA33351).

3. FOCUS RING DRIVE UNIT

3rd LENS GROUP

Use the new 3rd lens group wrench J11290, and refer to AF-S300/2.8D(JAA33351).

INDEX RING, CONTACT BRUSH

Refer to AF-S300/2.8D(JAA33351).

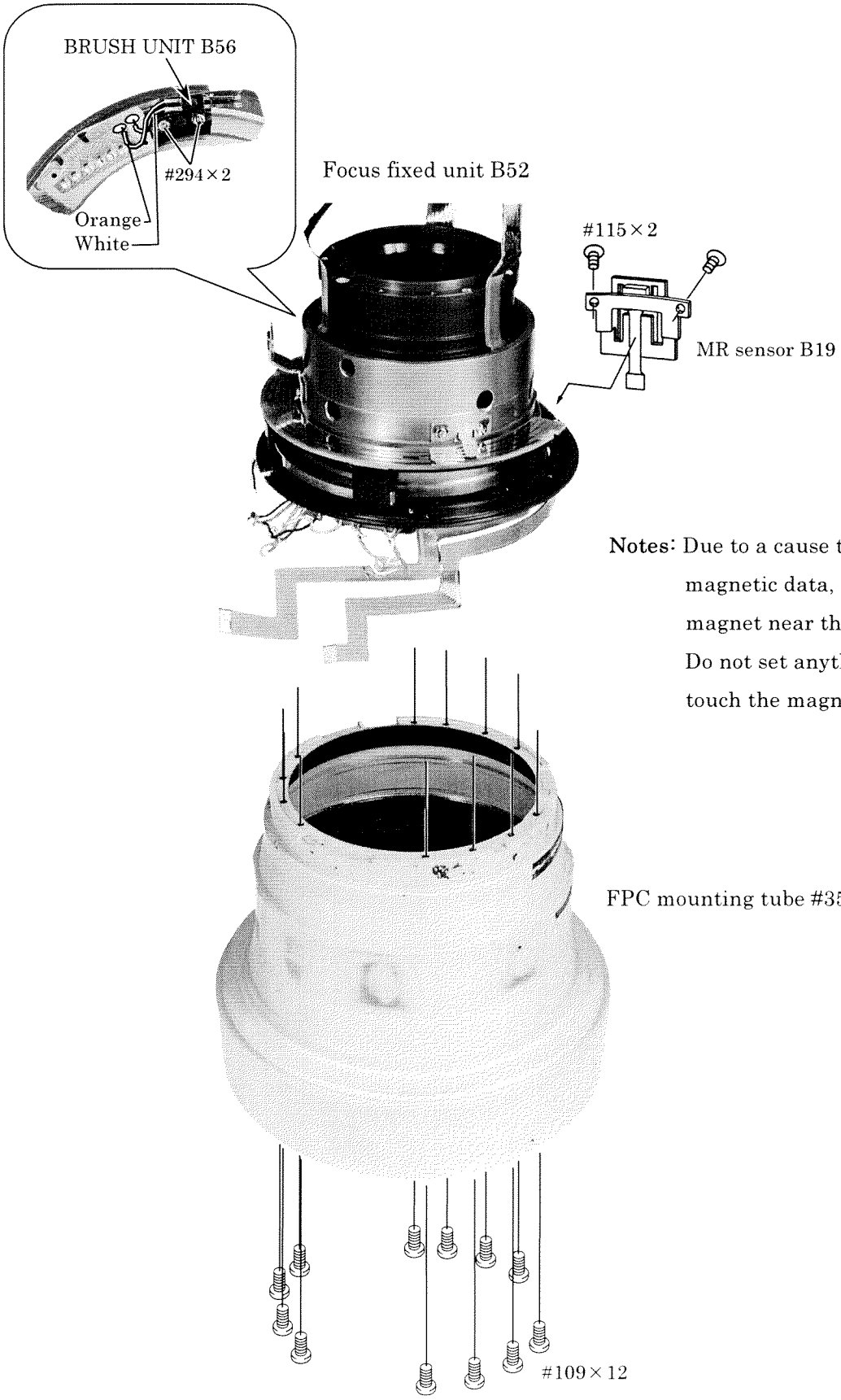
RETAINING RING, ROTATION DETECTION BASE PLATE, TRANSPARENT RING

Refer to AF-S300/2.8D(JAA33351).

SWM ASSEMBLY

Refer to AF-S300/2.8D(JAA33351).

MR SENSOR, FPC MOUNTING TUBE, BRUSH UNIT



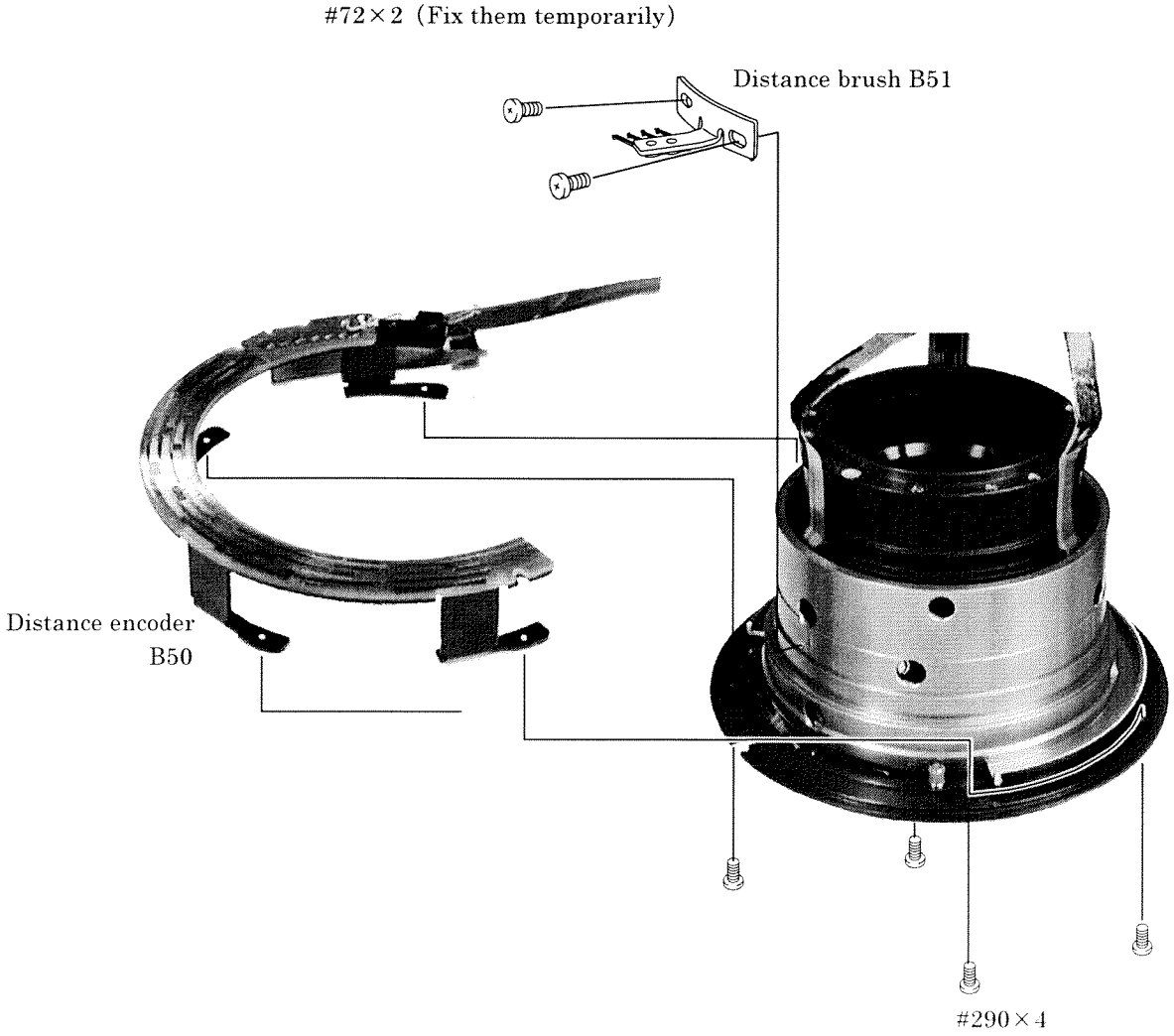
Notes: Due to a cause to damage the magnetic data, do not place any magnet near the magnetic tape. Do not set anything magnetic to touch the magnetic tape either

〔3〕ASSEMBLING／ADJUSTMENT

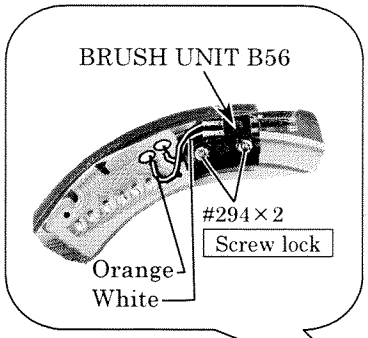
1．FOCUS RING DRIVE UNIT

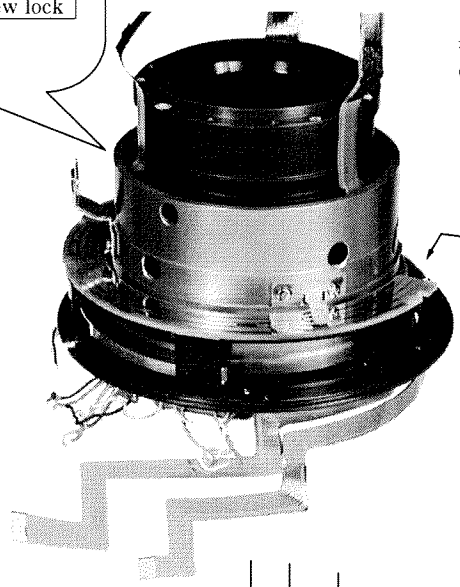
DISTANCE ENCODER, DISTANCE BRUSH

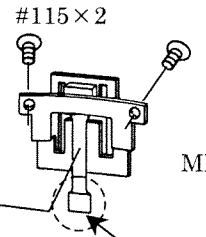
Notes: The focus fixed unit B52 is adjusted the torque under condition that is assembled up to B51.
Therefore, when it is necessary to disassemble the parts except the distance encoder and distance brush, replace B52.



MR SENSOR, FPC MOUNTING TUBE, BRUSH UNIT



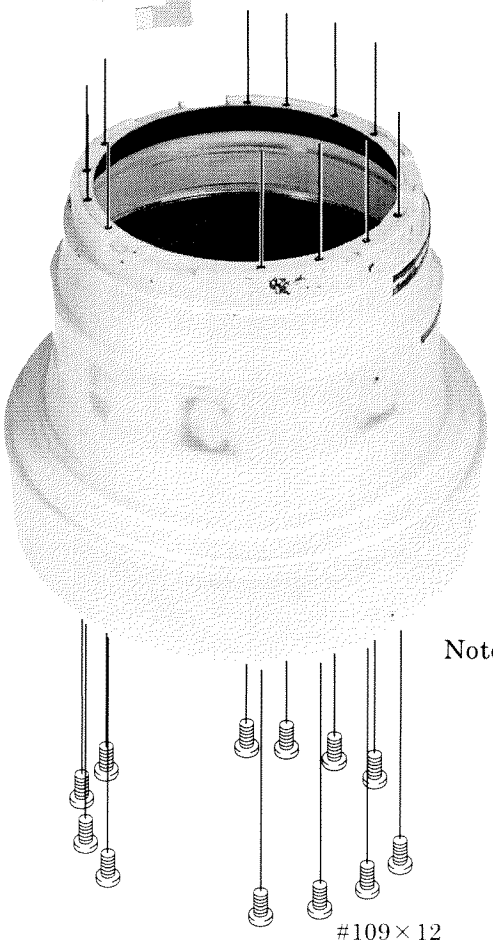




MR sensor B19

★Where to connect the communication tool (J15352).

Notes: Due to a cause to damage the magnetic data, do not place any magnet near the magnetic tape. Do not set anything magnetic to touch the magnetic tape either



FPC mounting tube #35

⚠1 (Addition)

Notes: Do not apply the adhesive to the 1 of the screws #109×12, which is tightened in the white screw hole that is used for the body ground, but apply the Flat black paint(XF-1) to the screw after tightening it.
Apply the Lock End B to the other 11 screws.

サービス計画課 M

INSPECTION AND ADJUSTMENT FOR THE WAVEFORM OUTPUT FROM MR ENCODER

Refer to AF-S80-200/2.8D(JAA76551).

However, for the position where to connect the communication tool (J15325), refer to the ★ marked part in the previous page(L9).

SWM ASSEMBLY

Refer to AF-S300/2.8D(JAA33351).

ADJUSTMENT OF DISTANCE ENCODER BRUSH POSITION

Refer to AF-S300/2.8D(JAA33351).

MF RING, TRANSPARENT RING

Refer to AF-S300/2.8D(JAA33351).

CHECK AND ADJUSTMENT OF THE MF RING ROTATION COUPLING

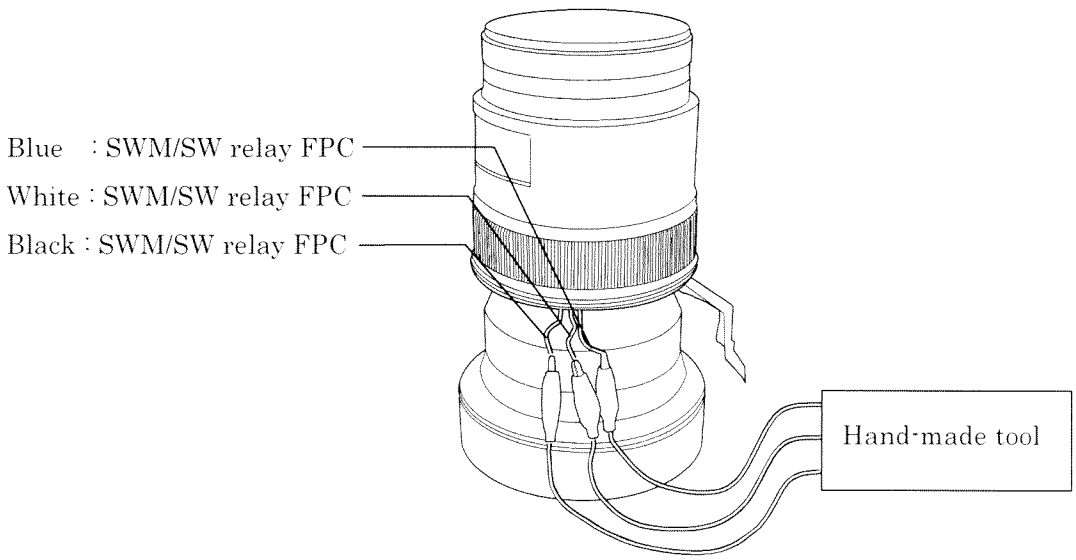
Refer to AF-S300/2.8D(JAA33351).

CONTACT BRUSH, INDEX RING

Refer to AF-S300/2.8D(JAA33351).

CHECK OF THE FOCUS RING DRIVE

Connect the codes of the hand-made tool for SWM'S rotative motion to the black, white and blue codes of the SWM/SW relay FPC as shown in Picture. For how to inspect, refer to AF-S200/2.8D(JAA33351).



HOW TO CHECK ONLY FOR THE SWM ASSEMBLY

Refer to AF-S300/2.8D(JAA33351).

2. REAR GROUP

EE LOCK RING, APERTURE RING, BAYONET MOUNT, AF CONTACT FPC

Refer to AF-S300/2.8D(JAA33351).

FIXED APERTURE UNIT, COUPLING KEY

Refer to AF-S300/2.8D(JAA33351).

FILTER RETAINER, DC-DC CONVERTER, 4th LENS GROUP

Refer to AF-S300/2.8D(JAA33351).

APERTURE BLADE UNIT

Refer to AF-S300/2.8D(JAA33351).

APERTURE DIAMETER ADJUSTMENT

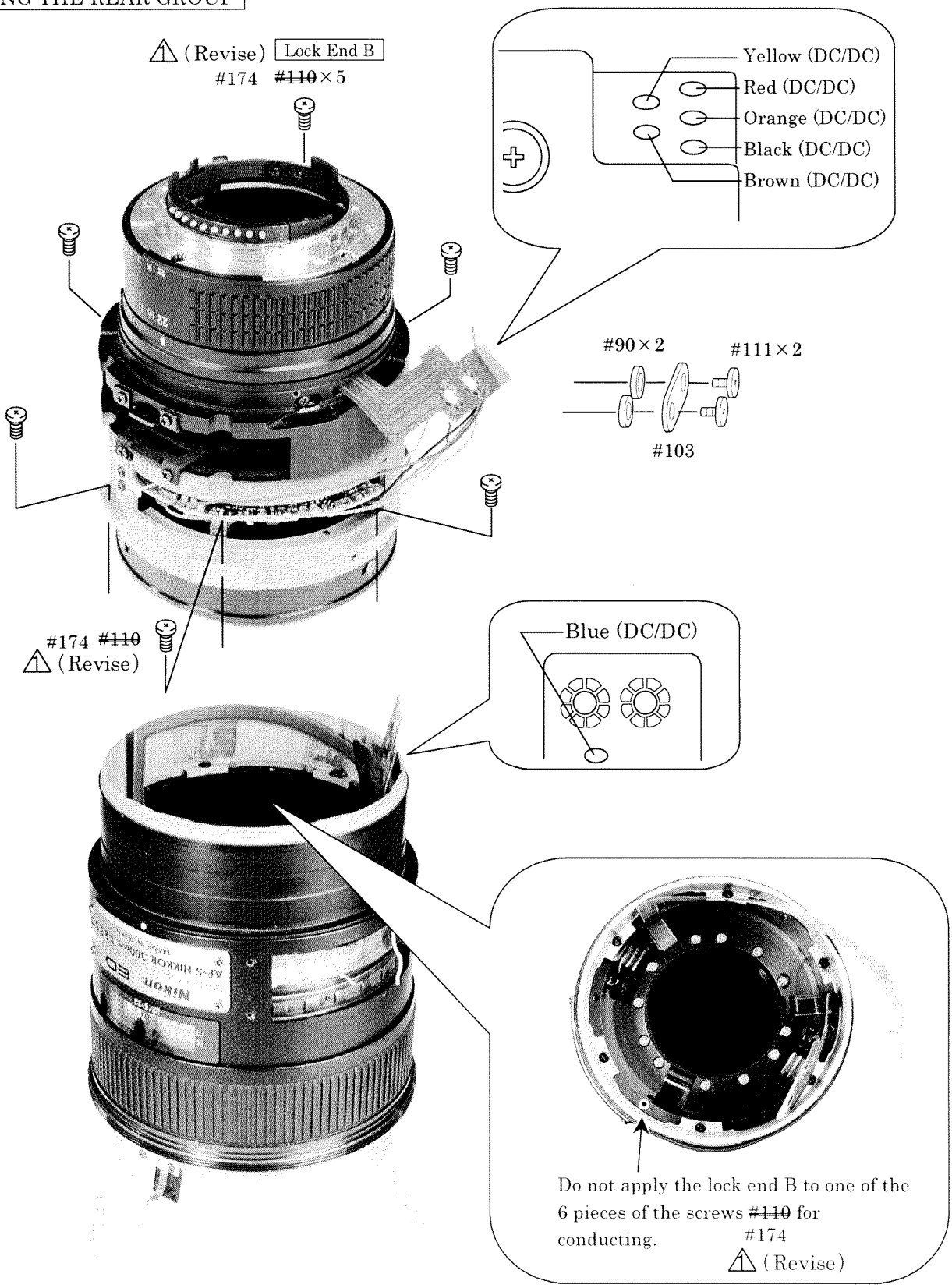
Refer to AF-S300/2.8D(JAA33351).

APERTURE LEVER POSITION ADJUSTMENT

Refer to AF-S300/2.8D(JAA33351).

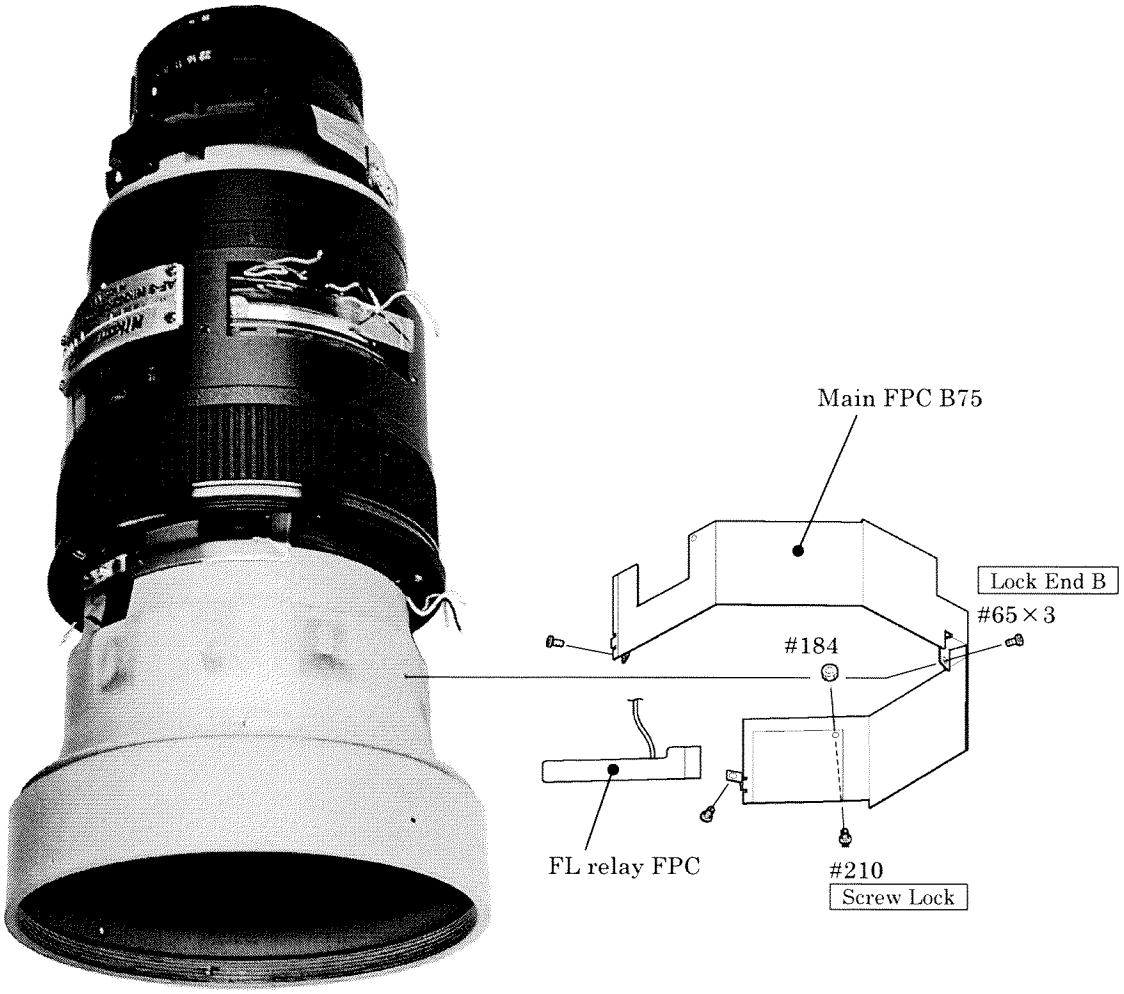
3. APPEARANCE

MOUNTING THE REAR GROUP

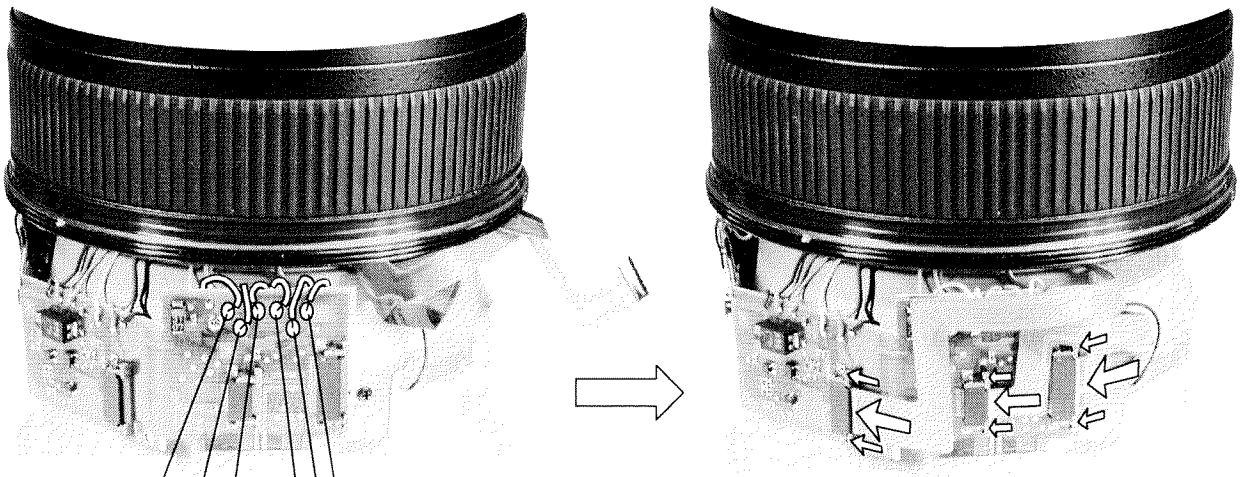


サービス計画課 M

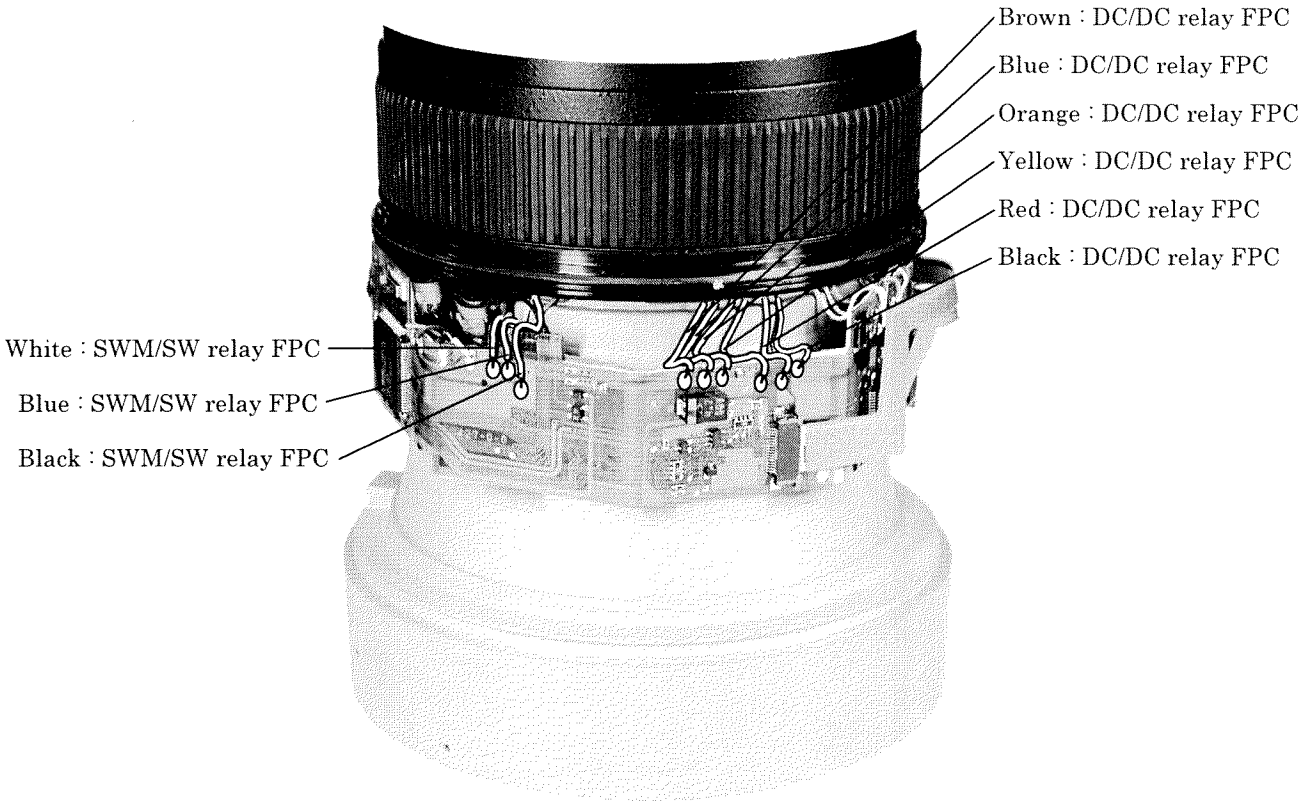
MAIN FPC

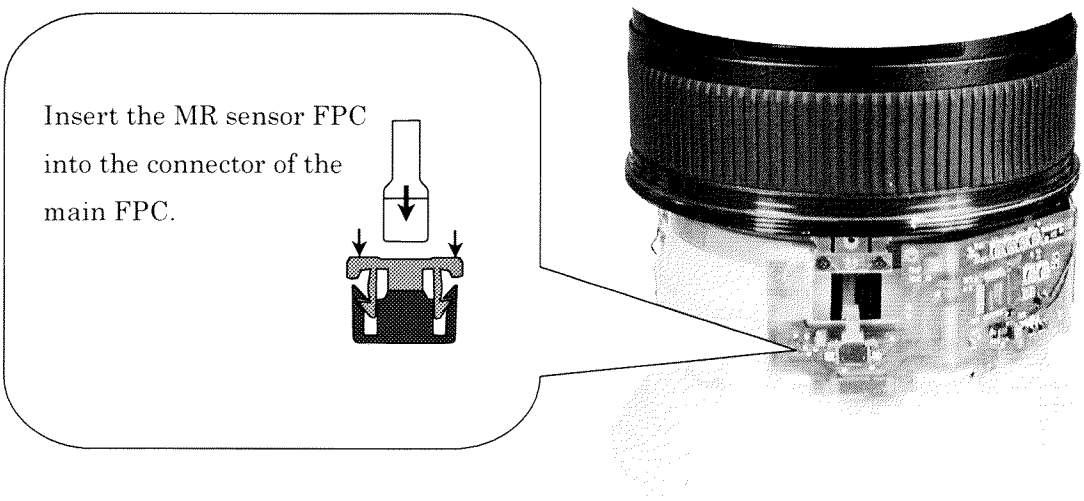


- Insert the 3 pieces of the relay FPC in the connector.



Yellow : SWM/SW relay FPC
White : SWM/SW relay FPC
Green : SWM/SW relay FPC
Red : SWM/SW relay FPC
White : SWM/SW relay FPC
Orange : SWM/SW relay FPC


Brown : DC/DC relay FPC
Blue : DC/DC relay FPC
Orange : DC/DC relay FPC
Yellow : DC/DC relay FPC
Red : DC/DC relay FPC
Black : DC/DC relay FPC
White : SWM/SW relay FPC
Blue : SWM/SW relay FPC
Black : SWM/SW relay FPC


Insert the MR sensor FPC into the connector of the main FPC.

PREPARATION FOR ADJUSTMENT OF THE MAIN FPC

Make the lead wires [White] and [Orange] of the focus mode switch short so that the focus mode switch becomes M/A and refer to AF-S800-200/2.8D(JAA76551).

PULSE ADJUSTMENT FOR THE MR ENCODER

Refer to AF-S80-200/2.8D(JAA76551).

ADJUSTMENT FOR SCANNING SPEED／INSPECTION FOR DRIVING FREQUENCY

Refer to AF-S80-200/2.8D(JAA76551) except the following scanning speed.

The numerical value of scanning speed : ３．３±０．１sec（１０±０．３rpm）

ADJUSTMENT FOR THE OSCILLATION CIRCUIT

Refer to AF-S80-200/2.8D(JAA76551).

WRITE DATA IN EEPROM

- When replacing the main FPC, it is necessary to write the fixed value data in EEPROM. This lens does not have the aberration compensation data.

【Follow the procedures for writing the fixed value】

①Connect everything with each other for the inspection system for AF-S lens.
It is possible to conduct adjustment as the oscillation circuit is connected for adjustment. Then, do not use the switch tool, the H8 D/A converter and so.

②Select "READING AND REWRITING THE EEPROM DATA" from the menu items of the inspection programme for AF-S tele lens.

③Write the fixed value.

ADJUSTMENT FOR MOTOR CONTROL

• In order to further optimize the SWM's initial driving, this adjustment should be conducted.
Accordingly, after adjusting the oscillation circuit, be sure to conduct the adjustment.

Notes : During adjustment, be sure to keep the lens flat.
In the case of replacing the main FPC, if not writing the fixed value in EEPROM, the adjustment cannot be done normally.
In this accord, be sure to write the data prior to the regular adjustment.

①Connect everything with each other as the inspection system for the AF-S lens.
Although it is possible to conduct adjustment in the already arranged connection for adjusting the oscillation circuit, some of equipment such as the switch tool, the H8 D/A converter or so are not necessary then for its operation.

②Ensure that each set value is actually applied to both current and voltage for the rated voltage power supply.
Then, turn on the rated voltage power supply for both contacts A and F.

Notes : In case the current meter's hand widely swings, due to electrically short condition in the circuit, Be sure to immediately turn off the power supply.

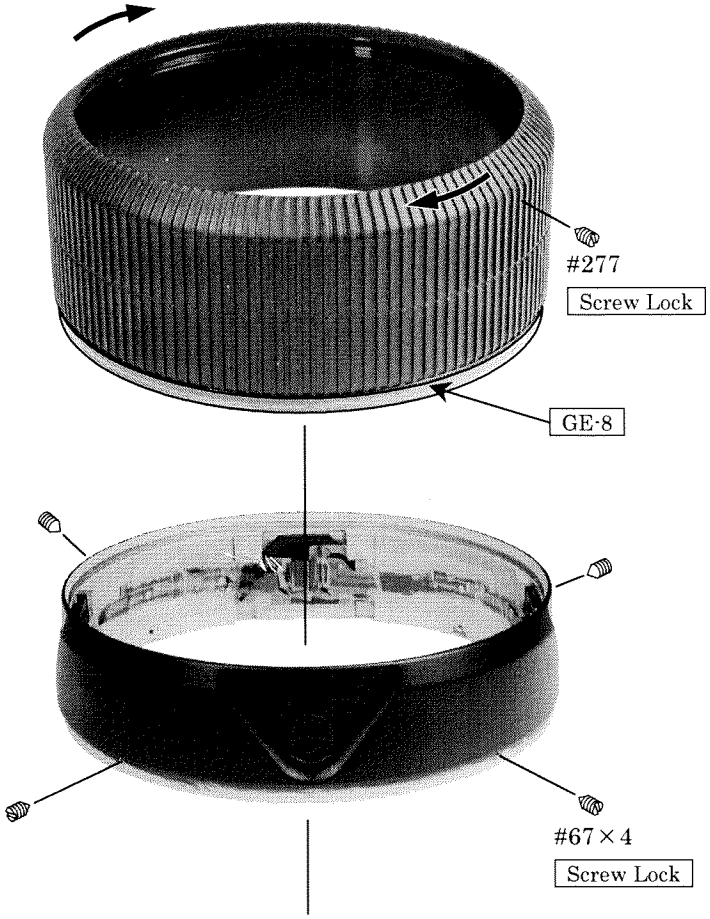
③Select "ADJUSTMENT FOR MOTOR CONTROL" from the menu items in the inspection programme for AF-S tele lens, and then conduct adjustment.

④Turn off the rated voltage power supply for both contacts A and F.

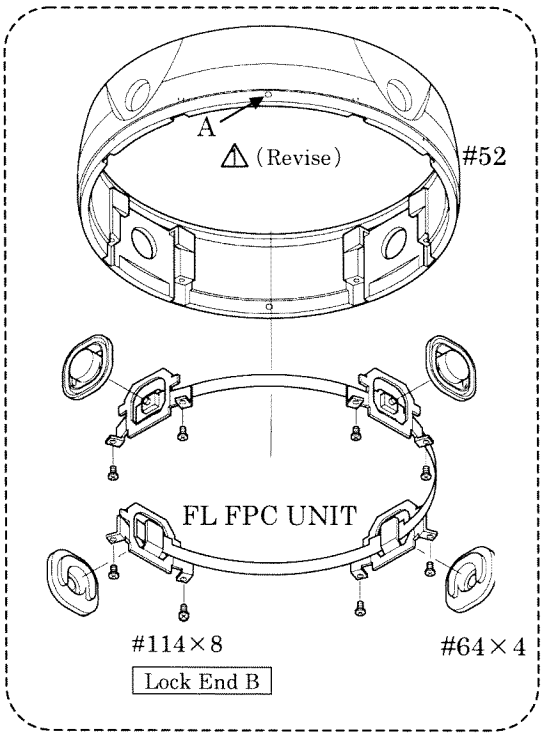
HOW TO MANAGE AFTER ADJUSTING THE MAIN FPC

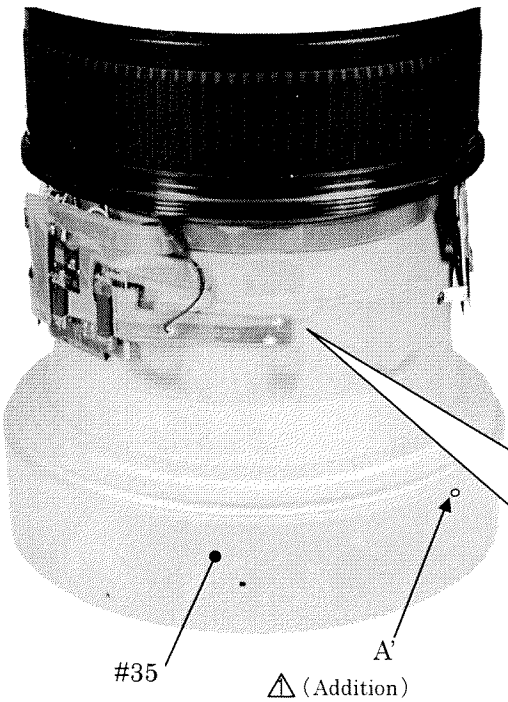
• Remove the communication tool, and then apply a tape TA-0001 on the FPC communications contact for protection.

AF LOCK RING, MF RING



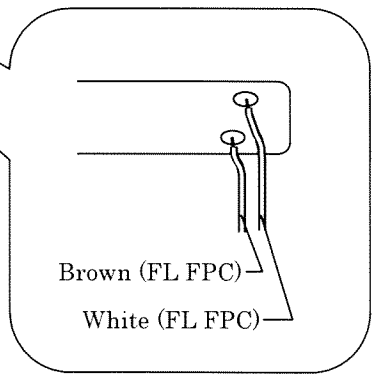
(AF LOCK RING)





⚠ (Revise)

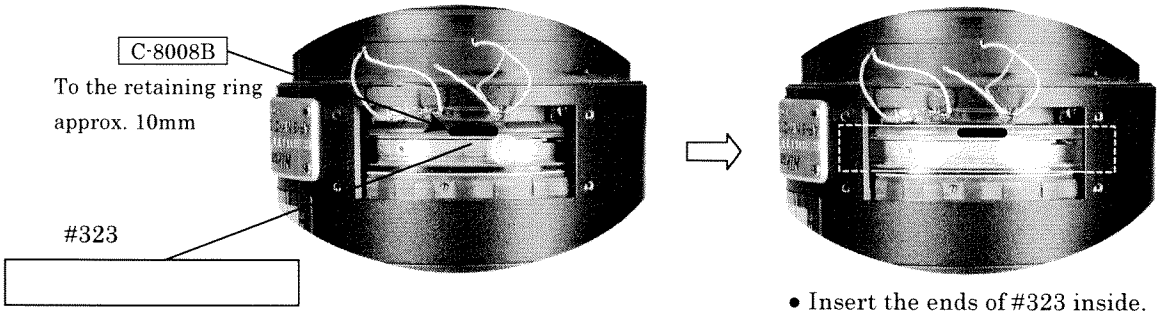
- Normally align the A section (a hollow) on the AF lock ring with the A' section (a hollow) on the #35 for the AF lock ring.
- Mount the MF ring in the arrow mark direction by rotating. Tighten the set screw #277 on the MF ring. Tapped hole is under the rubber ring.



サービス計画課 M

CHANGE-OVER SWITCH UNIT

Apply the sheet #323 to the window before mounting the change switch unit, and refer to AF-S300/2.8D(JAA33351).

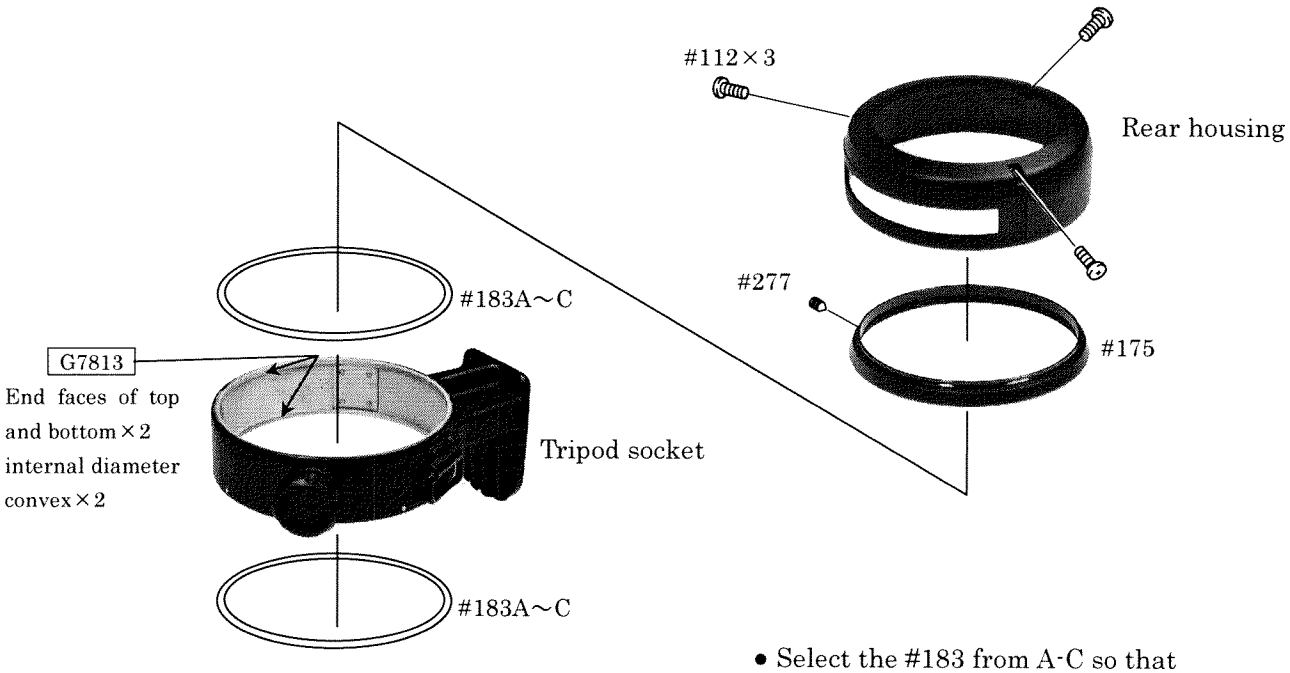


• Insert the ends of #323 inside.

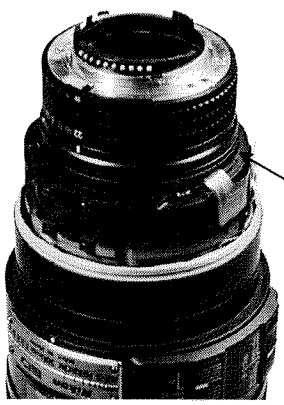
LENS OPERATION CHECK

Refer to AF-S300/2.8D(JAA33351).

TRIPOD SOCKET, REAR HOUSING



• Select the #183 from A-C so that the tripod socket unit rotates smoothly.



3rd LENS GROUP

Use the new 3rd lens group wrench J11290, and refer to AF-S300/2.8D(JAA33351).

1st LENS GROUP, 2nd LENS GROUP

Use the new 2nd lens group wrench J11288, and refer to AF-S300/2.8D(JAA33351).
When removing the lens retaining ring, apply Grease: MZ-800S to the lead of the retaining ring. Apply the screw lock to the retaining ring that cannot be seen from the lens external appearance and fix that which can be seen by the black paint.

FILTER

Refer to AF-S300/2.8D(JAA33351).

ADJUSTMENT AND CHECK FOR F.F.D. (BACK FOCUS), "∞" ALIGNMENT

Refer to AF-S300/2.8D(JAA33351).

RUBBER RING #46

Refer to AF-S300/2.8D(JAA33351).

LENS OPERATION CHECK

Refer to the page L38 to L47 in the repair manual for AF-S 80-200/2.8D (JAA76551) and check the operational conditions.

In addition what is displayed on PC screen is slightly different from the statements in check list.

The followings are the tolerances for standards.

(2)Image of "operation of MR encoder"

```
TYPE OF LENS : AF-S NIKKOR 300mm/2.8D II              CPU VERSION : 1.00.04
OPERATION OF MR ENCODER

POSITION WHEN CHECK BEGINS [PULSE(S)] ----------------------------------------  271
POSITION WHEN CHECK IS ENDED [PULSE(S)] --------------------------------------  272
PULSE NUMBER DIFFERENCE BEFORE / AFTER CHECK.  [PULSE(S)] ---------------------    1
STANDARD FOR DIFFERENCE IN THE NUMBER PULSE  -10 TO   10  [PULSE(S)]
                                                                    IN STANDARD.
**************************************************
THE TOTAL NUMBER OF PULSE(S) AT INSPECTION  [PULSE(S)] ---------------------- 14482
STANDARD FOR THE NUMBER : FROM 14334 TO 14631  [PULSE(S)]
                                                                    IN STANDARD.



PUSH ESC KEY TO RETURN TO MENU.
```

(3) Image of "lens driving stop accuracy"

```
TYPE OF LENS : AF-S NIKKOR 300mm/2.8D II              CPU VERSION : 1.00.04
INSPECTION OF DRIVING STOP ACCURACY.
①→NUMBER OF LENS GO-AND-RETURN OPERATIONS.                          5 / 5 TIME(S)
NUMBER OF LENS DRIVING TIMES (DF0+DF1+DF2+DF3+DF4+DF5+DF6)  :       272TIME(S)
MAXMUM PULSEABS. (VALUE)(DF0+DF1+DF2+DF3+DF4+DF5+DF6)       :         5 PULSE(S)
OVER (OR UNDER) RUN PULSE(S).                                       5 PULSE(S)
LENS DRIVING TIME    :  DF1=68  DF2=68  DF3=68  DF4=68  DF5=64  DF6=59
DIRECTION            :          INF → CLOSE                    CLOSE → INF
AMOUNT               :    DF1      DF2      DF3          DF1      DF2      DF3
UNDER(-), OVER(+)    :  (-)(+)  (-)(+)  (-)(+)       (-)(+)  (-)(+)  (-)(+)
    0 - 9            :   28  6  28  6  34  0          30  4  31  3  34  0
   10 - 27           :    0  0   0  0   0  0           0  0   0  0   0  0
   19 - 27           :    0  0   0  0   0  0           0  0   0  0   0  0
④→  28 -             :    0  0   0  0   0  0           0  0   0  0   0  0
DIRECTION            :          INF → CLOSE                    CLOSE → INF
AMOUNT               :    DF4      DF5      DF6          DF4      DF5      DF6
UNDER(-), OVER(+)    :  (-)(+)  (-)(+)  (-)(+)       (-)(+)  (-)(+)  (-)(+)
    0 - 9            :   25  9  30  2  26  4          34  0  31  1  27  2
   10 - 27           :    0  0   0  0   0  0           0  0   0  0   0  0
   19 - 27           :    0  0   0  0   0  0           0  0   0  0   0  0
⑤→  28 -             :    0  0   0  0   0  0           0  0   0  0   0  0
②→RATIO (1)  (%)     : Df1=0.00  Df2=0.00  Df3=0.00  Df4=0.00  Df5=0.00  Df6=0.00
③→RATIO (2)  (%)     : Df1=0.00  Df2=0.00  Df3=0.00  Df4=0.00  Df5=0.00  Df6=0.00
PUSH ESC KEY TO RETURN TO MENU.
```

Note : If the MF ring is rotated during lens scanning, an error value is shown for the pulses.
Don't touch the MF ring during operation.
The above image is displayed during lens scanning. Execute inspection for the 5 postures as mentioned below.

(Lens posture at inspection)

Lens inclination	Position of index window
Horizontal	Up, left and right
Front group 90° upward	
Front group 90° downward	

The pulses of overrun／underrun must be within the standards after the lenses have reciprocated five times ("5／5TIME(S)." in ① of the image).

Standards RATIO (1)is 40% or less for Df1～Df6 ——— ② of the image
(Occurrence ratio of 10～27 pulses)

RATIO (2)is 10% or less for Df1～Df6 ——— ③ of the image
(Occurrence ratio of 19～27 pulses)

Occurrence of 28 or more pulses is 0 for Df1～Df6 —— ④ and ⑤ of the image
(It is malfunction if there is only one occurrence.)

※Df1～Df6 shows the lens driving amount.

(4) Image of "lens servo time"

```
TYPE OF LENS : AF-S NIKKOR 300mm/2.8D II          CPU VERSION : 1.00.04
INSPECTION OF LENS SERVO TIME.

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  SERVO AMOUNT                    STANDARD
1. [Df1]                          35m s  OR LESS.
2. [Df2]                          45m s  OR LESS.
3. [Df3]                          54m s  OR LESS.
4. [Df4]                          66m s  OR LESS.
5. [Df5]                          83m s  OR LESS.
6. [Df6]                          95m s  OR LESS.
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

7.  DRIVE TO INFINITY.
8.  DRIVE TO CLOSE.



SELECT A NUMBER.
PUSH ESC KEY TO MENU.
```

MOUNTING THE COUPLING CLAW

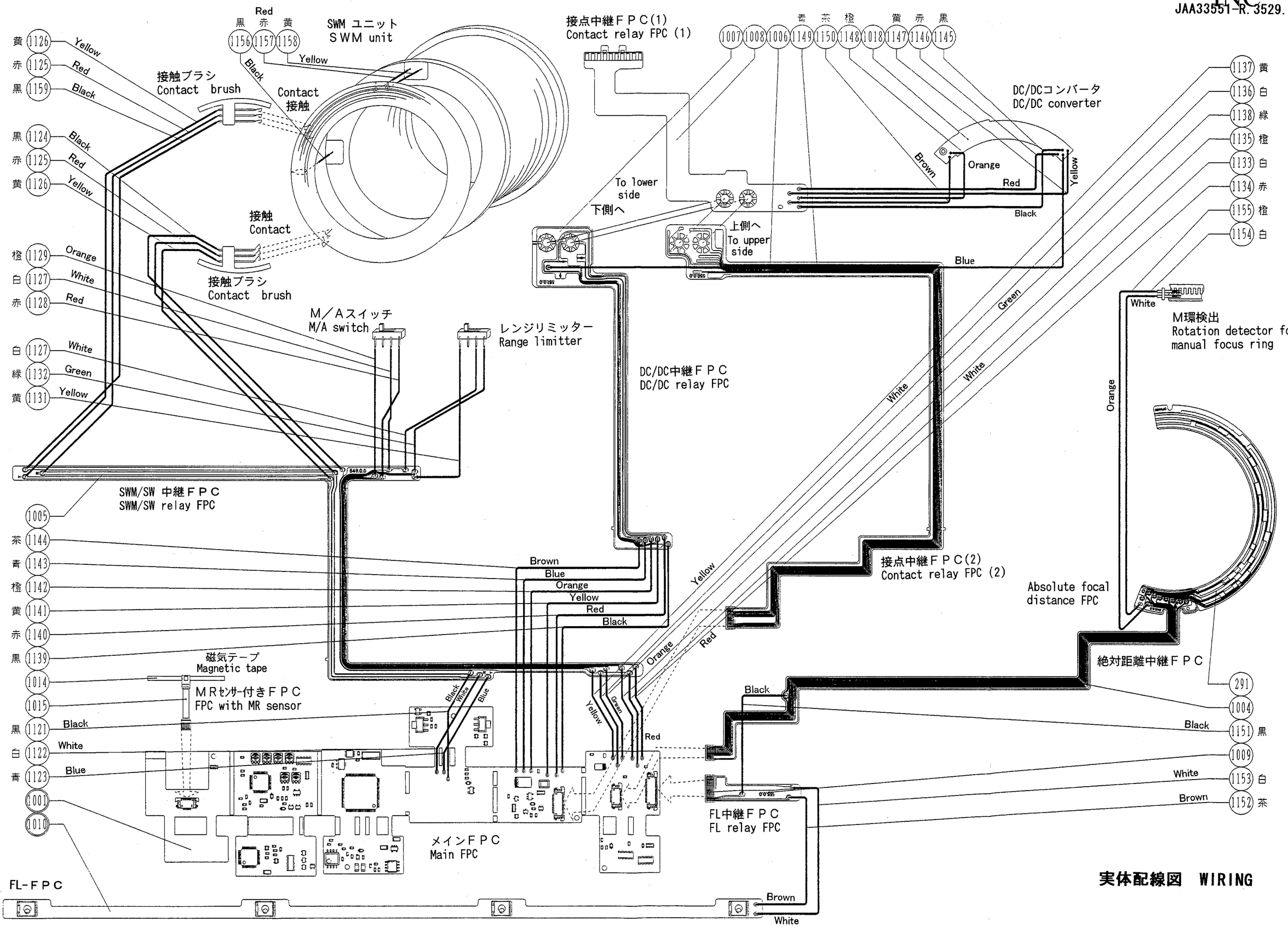
Refer to AF-S300/2.8D(JAA33351).

MODIFICATION (ROTATION) OF THE AF LOCK RING POSITION

Refer to AF-S300/2.8D(JAA33351).

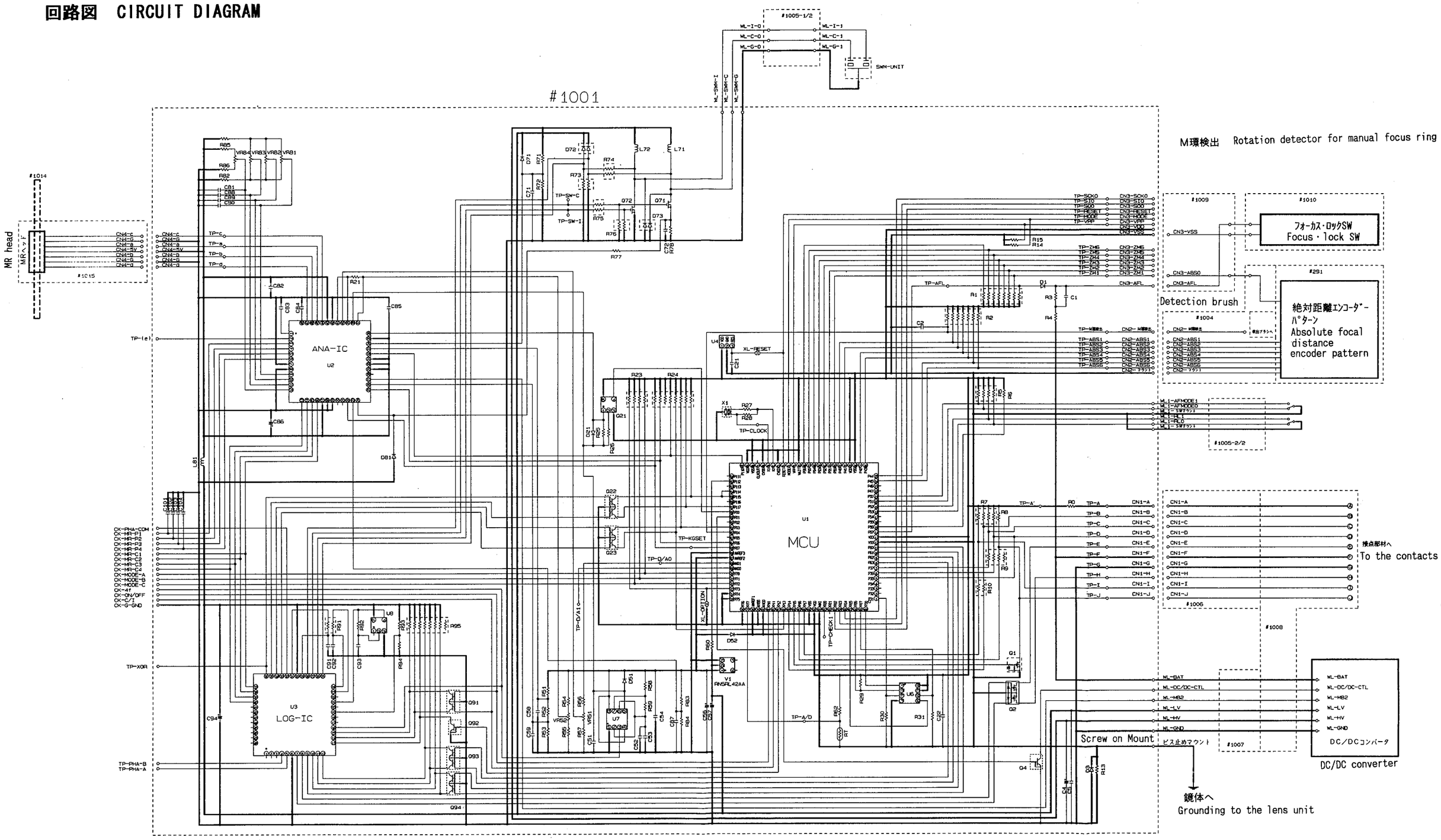
When replacing a part listed below, Some adjustment may be required

Parts replaced / Items of adjustment	MR SENSOR UNIT	FOCUS FIXED UNIT	SWM UNIT	MAIN FPC
Inspection and adjustment for the waveform output from MR encoder	○	○		
Pulse adjustment for the MR encoder	○	○		○
Adjustment for Scanning speed	○	○	○	○
Adjustment for the oscillation circuit	○	○	○	○
Write data in EEPROM	○	○	○	○
Adjustment for motor control	○	○	○	○



実体配線図　WIRING

回路図　CIRCUIT DIAGRAM



AF－S300／2．8DⅡ　EEPROM

2001-01-25

Address	Contents	CPU			Others
		1.00.04			
0	optional set value	0			
1	unused	－			
2	data for manufacturing processes	－			
3	value for control and adjust for motor	－			
4	data for controlling the lens	0			
5	〃	0			
6	〃	0			
7	〃	0			
8	〃	1			
9	〃	1			
10	〃	1			
11	〃	1			
12	〃	0			
13	unused	－			
｜	｜	｜			
26	unused	－			
27	checksum data	－			
28	data for controlling the lens	－			
｜	｜	｜			
127	data for controlling the lens	－			

・Each 'value' explained here means the fixed value and the default value.
Of them, there are some changes according to the lens operational condition(s).

・The sign of 「－」 in the table above means a value which changes in accordance with the lens operational condition(s).

〔5〕TOOLS

1. Wrenches and Measuring instruments (Main)

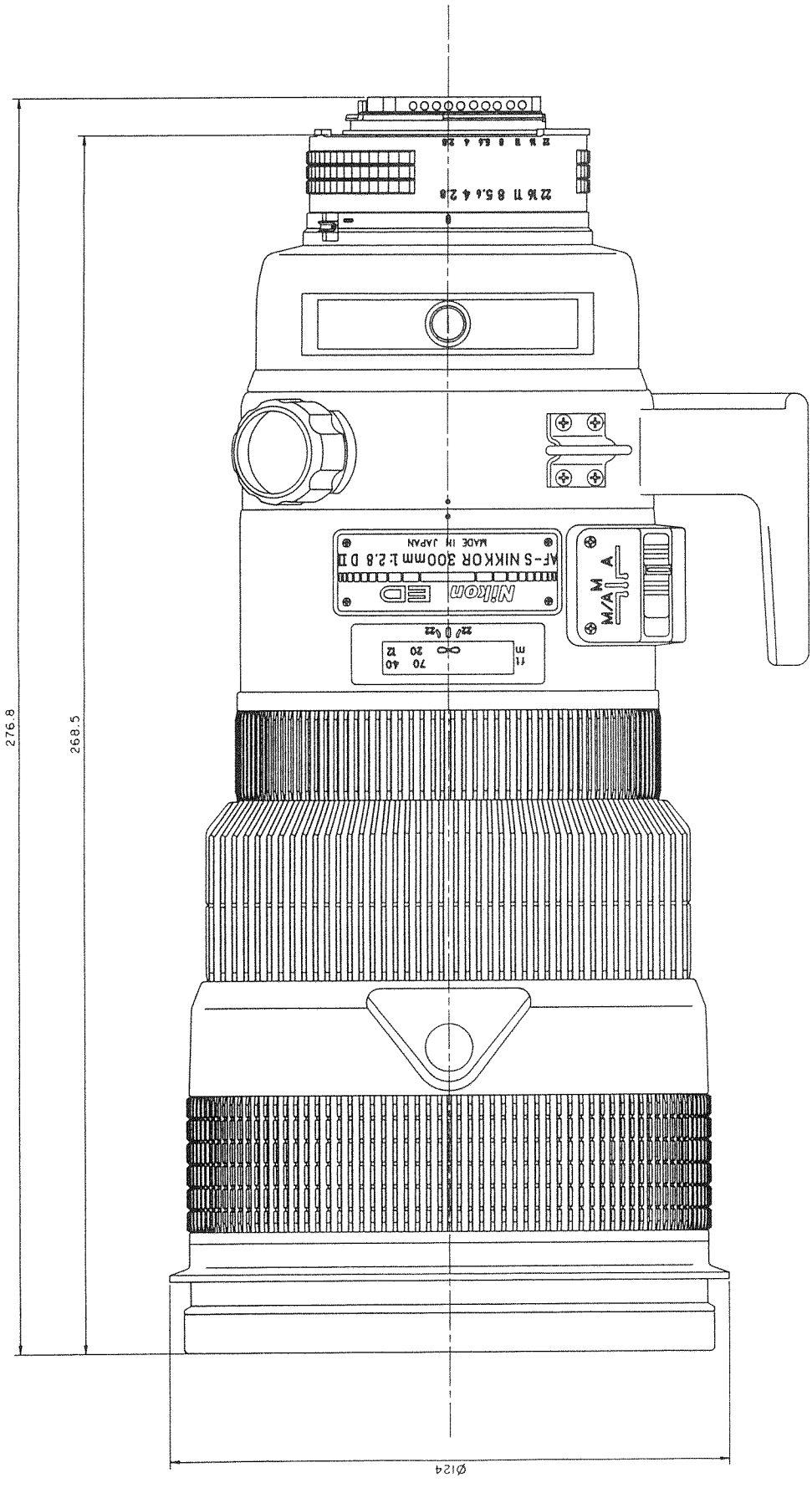
☆=New Tool

	Tool No.	Name	Remarks
☆	J11288	WRENCH FOR 2G	
☆	J11290	WRENCH FOR 3G	Usable for AF-S300/2.8D (JAA33351)
	J18323	AF-S TELE LENS Inspection and adjustment software	IBM 3.5-inch
	J15306	AF-I Communication box	The tool used for AF-I is used again
	J15307	AF-I Communication adapter	The tool used for AF-I is used again
	J15334	H8 D/A converter (F/V converter)	For adjusting the scanning speed
	J15352	Communication tool	Used for inspection and adjustment for output from the MR encoder
	J15353	Communication tool	For adjusting the Main FPC
	J15355	Switching tool	For adjusting the Main FPC

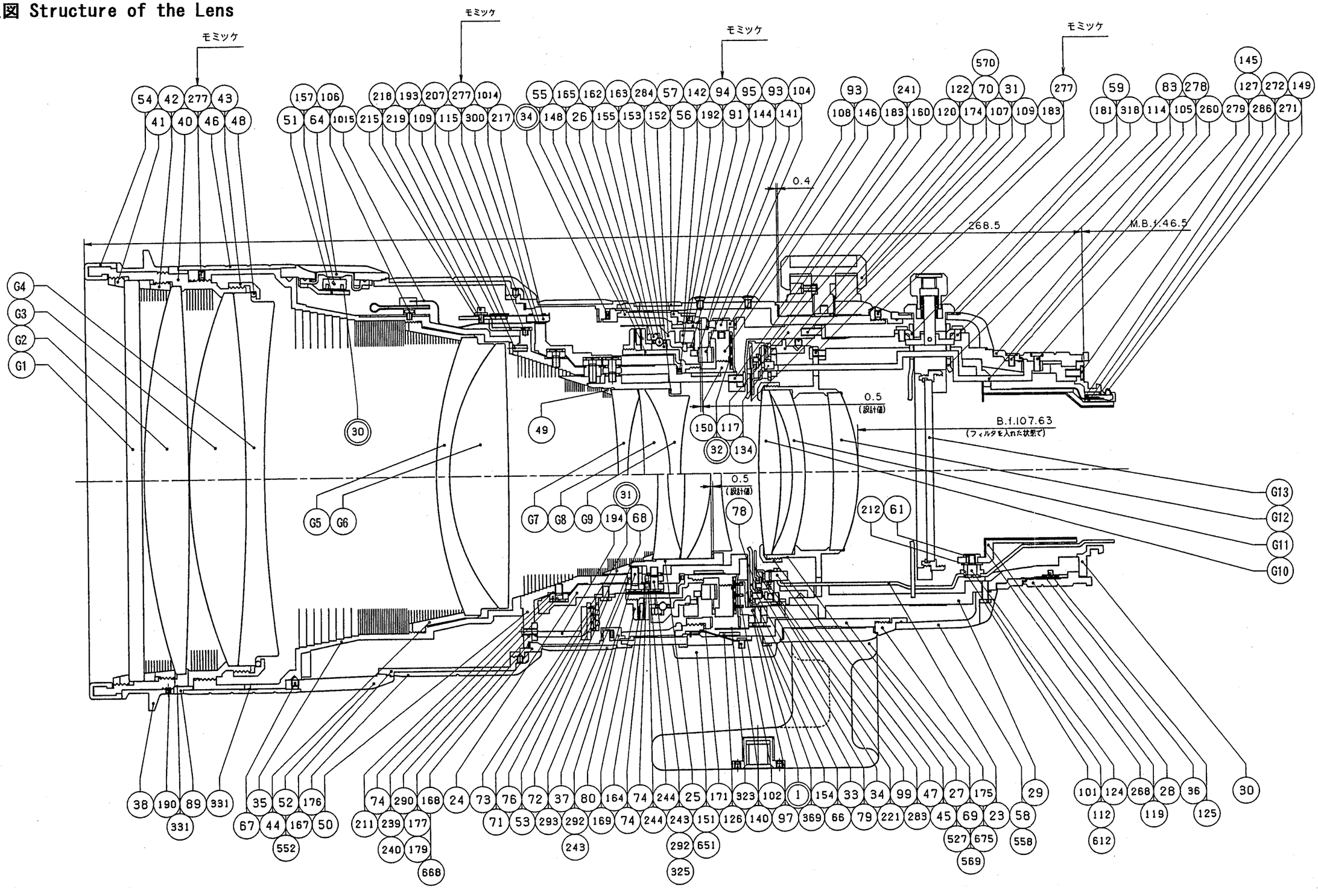
2. Hand-made tool

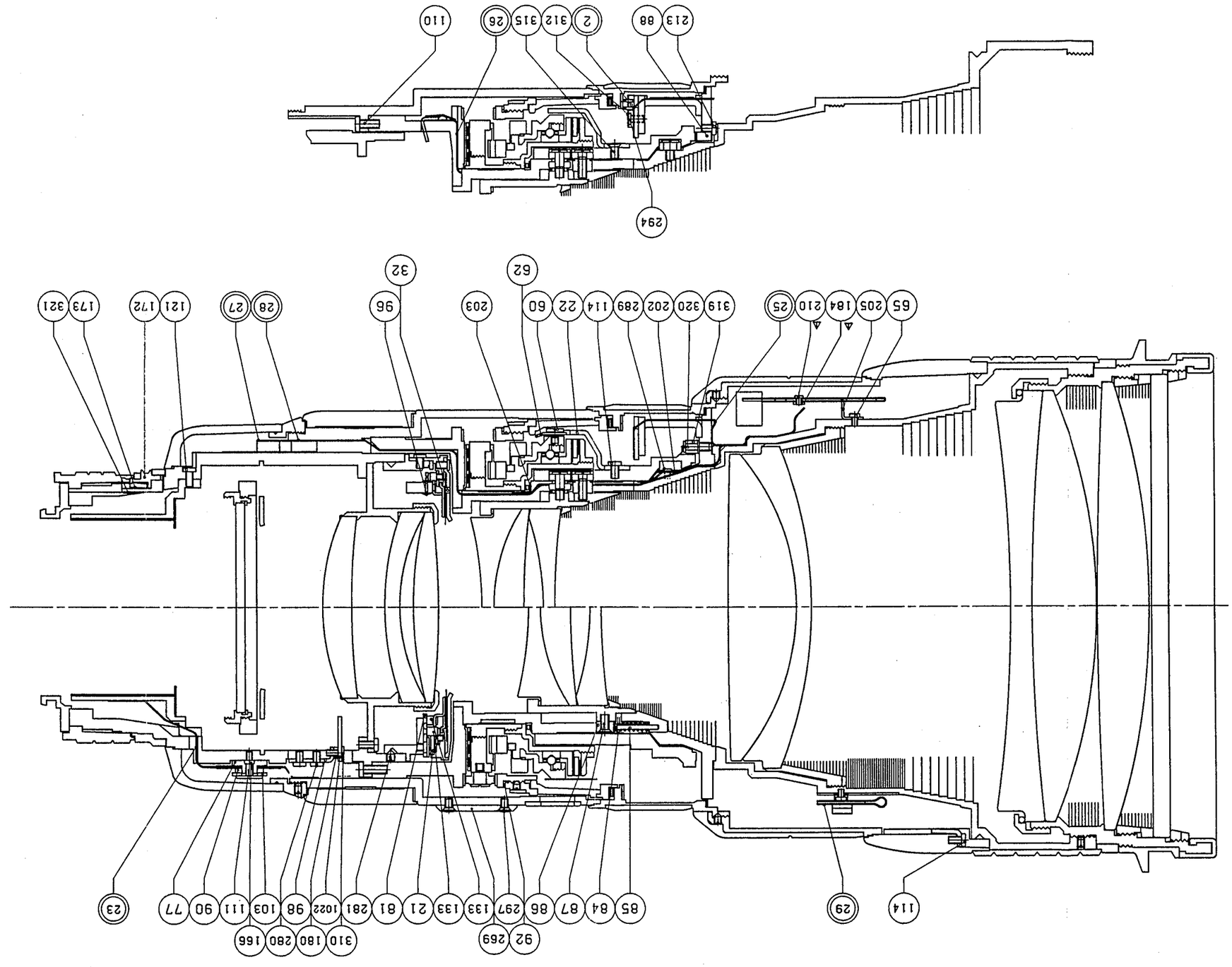
	Name	Remarks
Tool	SWM rotation actuating tool	The tool used for AF-S300/2.8 is used again

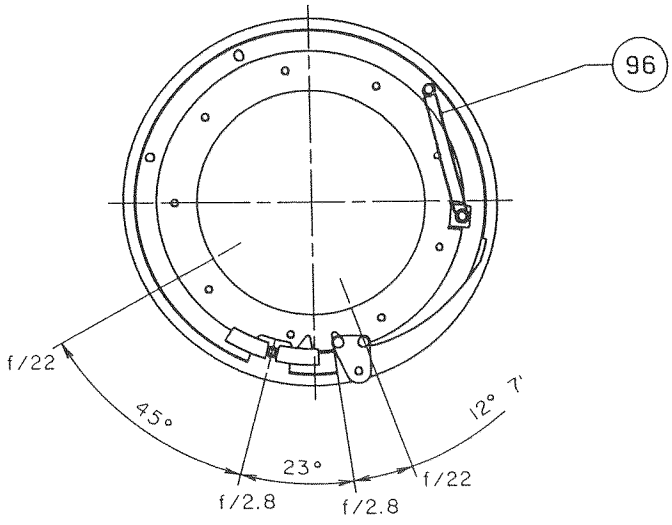
外観図 Sketch drawings



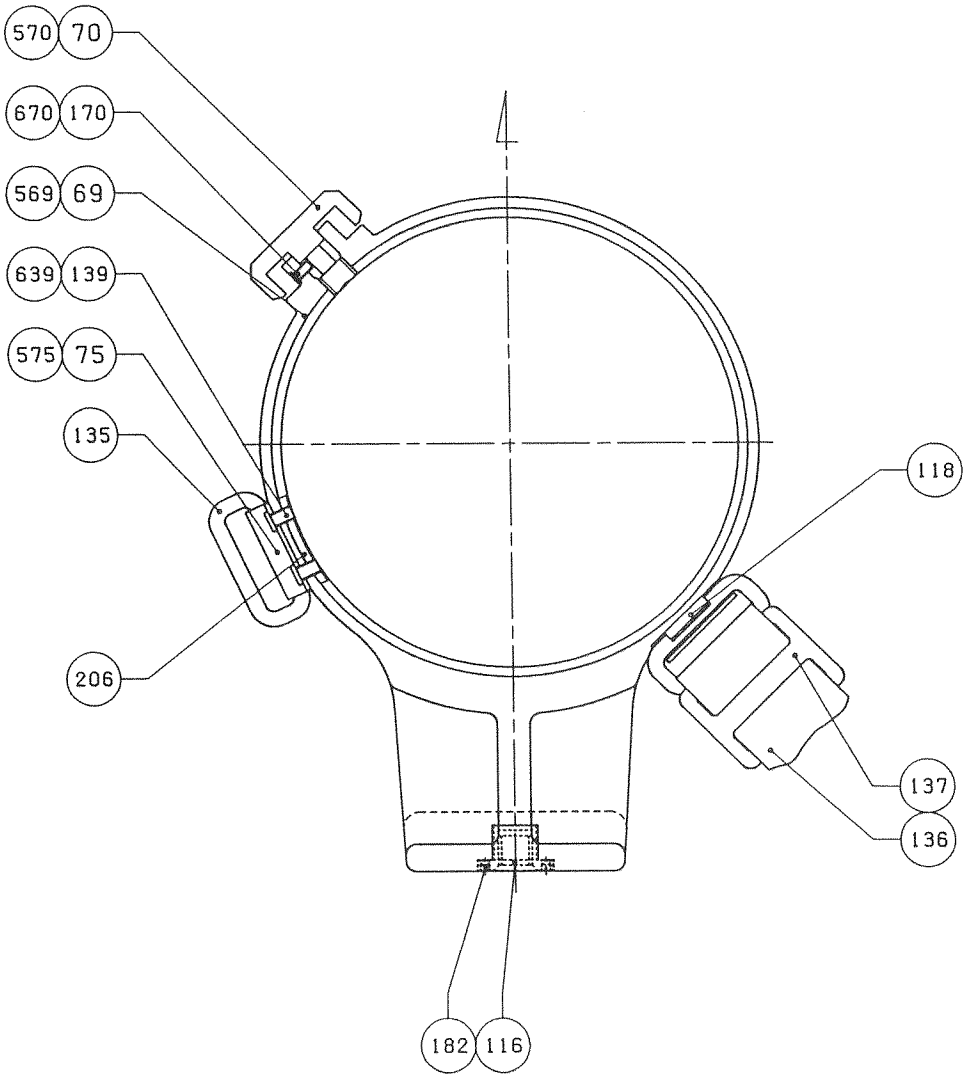
組立図 Structure of the Lens




110
26
315
312
2
88
213
294
32
62
173
321
121
172
27
28
96
203
60
22
114
289
202
320
319
25
210
184
205
65
23
77
90
111
103
98
1022
281
81
21
133
133
297
86
87
84
85
166
180
280
310
92
269
29
114


96
f/22
45°
23°
12°
f/22
f/2.8
f/2.8

絞り部後方より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206
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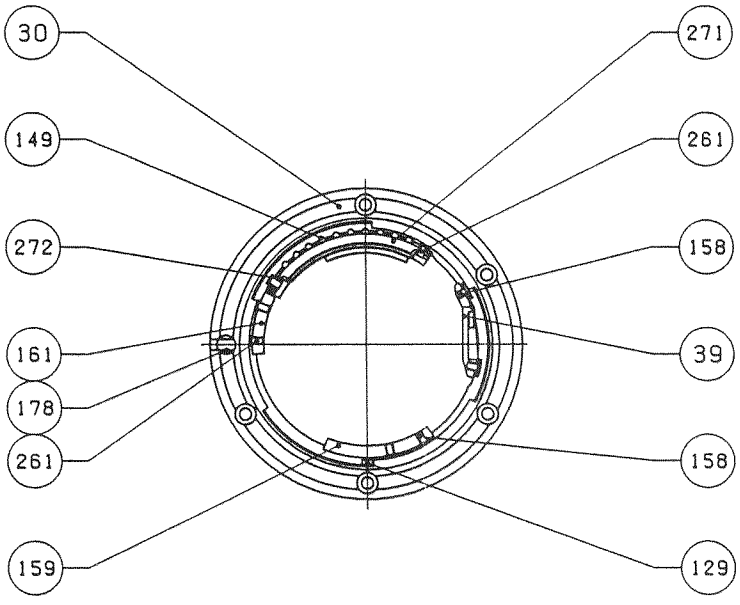
137
136
182
116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272
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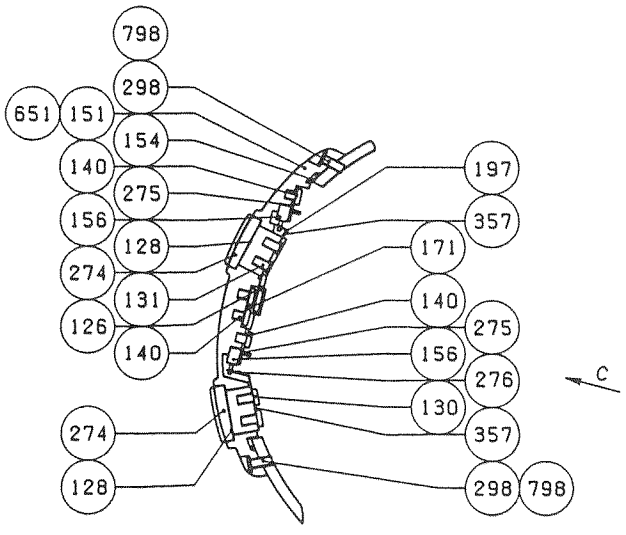
178
261
159
271
261
158
39
158
129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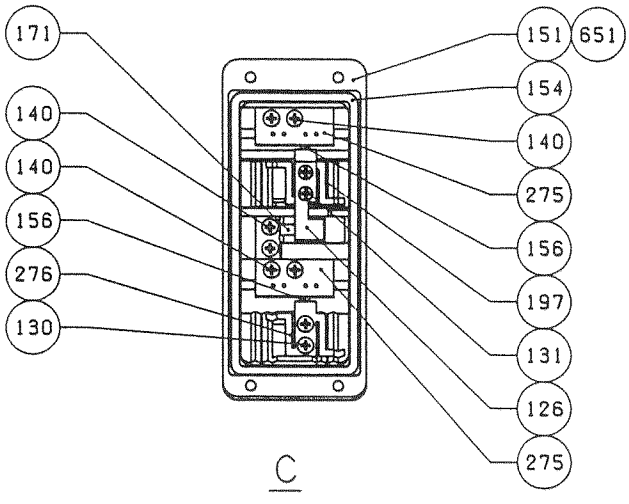
274
128
298
798
C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197
131
126
275

C